

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-6. (cancelled)

7. (currently amended) The ~~composition~~ article of claim + 32 wherein the derivatized nanoparticles are 0.1 to 50.0 % by weight of the polymeric layer.

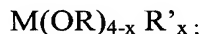
8-9. (cancelled)

10. (currently amended) The ~~composition of matter~~ article of claim + 32 wherein said inorganic nanoparticles comprise silica oxides, alumina oxides, boehmites, titanium oxides, zinc oxides, tin oxides, zirconium oxides, yttrium oxides, hafnium oxides, clays, or alumina silicates.

11. (currently amended) The ~~composition of matter~~ article of claim 10 wherein said inorganic nanoparticles comprise silicon dioxide, alumina oxide, clays or boehmite.

12-15. (cancelled)

16. (currently amended) The ~~composition of matter~~ article of claim + 32 wherein the metal-ion sequestrant is attached to the nanoparticle, by reacting the nanoparticle with a metal alkoxide intermediate of the sequestrant having the general formula:



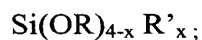
wherein M is silicon, titanium, aluminum, tin, or germanium;

x is an integer from 1 to 3;

R is an organic group; and

R' is an organic group containing an alpha amino carboxylate, a hydroxamate, or a catechol.

17. (currently amended) The ~~composition of matter~~ article of claim + 32 wherein said metal-ion sequestrant is attached to the nanoparticle by reacting the nanoparticle with a silicon alkoxide intermediate of the sequestrant having the general formula:



wherein x is an integer from 1 to 3;

R is an alkyl group; and

R' is an organic group containing an alpha amino carboxylate, a hydroxamate, or a catechol.

18-21. (cancelled)

22. (currently amended) The ~~composition of matter~~ article of claim + 32 wherein substantially all the metal-ion sequestrant is covalently bound to the nanoparticles.

23-26. (cancelled)

27. (currently amended) The article of claim ~~25~~ 32 wherein the polymeric layer is permeable to liquid media.

28. (currently amended) The article of claim ~~25~~ 32 wherein the polymeric layer is permeable to aqueous media.

29. (original) The article of claim 28 wherein the polymeric layer has a water permeability of greater than $1000 [(\text{cm}^3\text{cm})/(\text{cm}^2\text{sec/Pa})] \times 10^{13}$.

30. (original) The article of claim 28 wherein the polymeric layer has a water permeability of greater than $5000 [(\text{cm}^3\text{cm})/(\text{cm}^2\text{sec/Pa})] \times 10^{13}$.

31. (currently amended) The article of claim ~~25~~ 32 wherein the polymeric layer comprises one or more of polyvinyl alcohol, cellophane, water-based polyurethanes, polyester, nylon, high nitrile resins, polyethylene-polyvinyl alcohol copolymer, polystyrene, ethyl cellulose, cellulose acetate, cellulose nitrate,

aqueous latexes, polyacrylic acid, polystyrene sulfonate , polyamide, polymethacrylate, polyethylene terephthalate, polystyrene, polyethylene, polypropylene or polyacrylonitrile, or copolymers thereof.

32. (currently amended) The ~~An~~ article of ~~claim 25~~ comprising a polymeric layer, said polymeric layer further comprising immobilized derivatized nanoparticles comprising inorganic nanoparticles having an attached metal-ion sequestrant, wherein said inorganic nanoparticles have an average particle size of less than 200 nm and the metal-ion sequestrant comprises an alpha amino carboxylate, a hydroxamate, or a catechol functional group, further comprising a barrier layer; wherein the polymeric layer is between the surface of the article and the barrier layer and wherein the barrier layer does not contain the derivatized nanoparticles.

33. (original) The article of claim 32 wherein the barrier layer is permeable to liquid media.

34. (original) The article of claim 32 wherein the barrier layer is permeable to aqueous media.

35. (original) The article of claim 34 wherein the barrier layer has a water permeability of greater than $1000 [(cm^3 cm)/(cm^2 sec/Pa)] \times 10^{13}$.

36. (original) The article of claim 34 wherein the barrier layer has a water permeability of greater than $5000 [(cm^3 cm)/(cm^2 sec/Pa)] \times 10^{13}$.

37. (original) The article of claim 32 wherein the barrier layer has a thickness in the range of 0.1 microns to 10 microns.

38. (original) The article of claim 32 wherein the barrier layer comprises one or more of polyvinyl alcohol, cellophane, water-based polyurethanes, polyester, nylon, high nitrile resins, polyethylene-polyvinyl alcohol copolymer, polystyrene, ethyl cellulose, cellulose acetate, cellulose nitrate, aqueous latexes, polyacrylic acid, polystyrene sulfonate , polyamide, polymethacrylate,

polyethylene terephthalate, polystyrene, polyethylene, polypropylene or polyacrylonitrile, or copolymers thereof.

39. (original) The article of claim 32 wherein the barrier layer prevents the diffusion or passage of micro-organisms.

40. (original) The article of claim 32 wherein the barrier layer has a greater water permeability than the polymeric layer.

41. (currently amended) The article of claim ~~25~~ 32 wherein said inorganic nanoparticles have an average particle size of less than 100 nm.

42. (currently amended) The article of claim ~~25~~ 32 wherein said inorganic nanoparticles have an average particle size of less than 20 nm.

43. (currently amended) The article of claim ~~25~~ 32 wherein said inorganic nanoparticles have a specific surface area of greater than 100 m²/g.

44. (currently amended) The article of claim ~~25~~ 32 wherein said inorganic nanoparticles have a specific surface area of greater than 200 m²/g.

45. (currently amended) The article of claim ~~25~~ 32 wherein said inorganic nanoparticles have a specific surface area of greater than 300 m²/g.

46. (original) The article of claim 42 wherein said inorganic nanoparticles have a specific surface area of greater than 300 m²/g.

47. (currently amended) The article of claim ~~25~~ 32 wherein greater than 95% by weight of the inorganic nanoparticles have a particle size of less than 200 nm.

48. (currently amended) The article of claim ~~25~~ 32 wherein greater than 95% by weight of the inorganic nanoparticles have a particle size of less than 50 nm.